CANADA

NATIONAL ENERGY BOARD
REPORT TO
THE GOVERNOR IN COUNCIL

In the Matter of the Application under
The National Energy Board Act of

Trans–Canada Pipe Lines Limited

April 1971

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NATIONAL ENERGY BOARD

IN THE MATTER OF an application by Trans-Canada Pipe Lines Limited for a Certificate of Public Convenience and Necessity under Part III of the Act, amendments pursuant to section 17(2) of the Act to Licences GL-19, GL-20, GL-21, GL-37, GL-38 and GL-39, and a Licence under Part VI of the Act.

Heard at Ottawa on 26, 27 and 28 January, 1971

BEFORE:	J.G. Stabback	Presiding Member
	H.L. Briggs	Member
	Geoffrey Edge	Member

APPEARANCES:

J.M. Cameron	for Trans-Canada Pipe Lines Limited
R.L. Pierce, Q.C.	for the Attorney General of the Province of Saskatchewan and Saskatchewan Power Corporation
R.A. Scott	for the Minister of Justice and Attorney General of Ontario
G.A. Pouliot, Q.C. J.K. Archambault	for the Attorney General of the Province of Quebec
R.J. Ludgate	for Alberta and Southern Gas Co. Ltd.

G.J. Gorman, Q.C.	for Consolidated Natural Gas Limited and Consolidated Pipe Lines Company
C.D. Gonthier	for Gaz Métropolitain, inc.
P.F. Scully	for Northern and Central Gas Corporation Limited
H.J. Knowles	for The Consumers' Gas Company
J.W.S. McOuat	for Union Gas Company of Canada Limited
J.M. Hendry	for National Energy Board

THE APPLICATION

Trans-Canada Pipe Lines Limited ("Trans-Canada" or "the Applicant"), a company incorporated by Special Act of the Parliament of Canada, operates a pipe line system extending eastward from the Alberta-Saskatchewan border to serve communities within the Provinces of Saskatchewan, Manitoba, Ontario and Quebec, with connections on the international boundary near Emerson, Manitoba, Sault Ste. Marie, Sarnia and Niagara Falls, Ontario and Philipsburg, Quebec.

On 21 December 1970 Trans-Canada applied to the Board for:

(a) certificate of public convenience and necessity under Part III of the Act to construct and operate additional pipe line facilities, namely:

in 1971

(i) additions and modifications to existing Compressor Stations near Burstall, Saskatchewan, Ramore and Thunder Bay, Ontario; and

(ii) pipe line loops consisting of approximately 70.2 miles of 36-inch OD pipe line, and approximately 137.7 miles of 42-inch OD pipe line, at a total of sixteen locations in the Provinces of Alberta, Saskatchewan, Manitoba and Ontario; and

in 1972

(i) additions and modifications to existing Compressor Stations near Burstall, Saskatchewan, Haileybury and Kingston, Ontario; and

(ii) pipe line loops consisting of approximately 10.4 miles of 24-inch OD pipe line, approximately 383.3 miles of 36-inch pipe line, and approximately 91.7 miles of 42-inch OD pipe line, at a total of thirty-three locations in the Provinces of Saskatchewan, Manitoba, and Ontario;

(b) orders pursuant to section 17(2) of the Act varying Licences GL-19, GL-20, GL-21, GL-37, GL-38 and GL-39;

(c) licence under Part VI of the Act for the exportation of gas near Emerson, Manitoba at a rate not exceeding 17 billion cubic feet ("Bcf") in any twelve-month period ending on the 31st day of October for a term of twenty years commencing on 1 November, 1971, such gas to be used as fuel by Great Lakes Gas Transmission Company ("Great Lakes") to transport western Canadian gas to markets in eastern Canada.

The application was the subject of a public hearing held in Ottawa, 26 to 28 January, 1971.

At the commencement of the hearing the Applicant indicated it wished to start its 1971 construction program this winter. It also desired to commence immediately a portion of the 1972 construction relating to the clearing, grading and ditching of right-of-way but was unable to show at that time how it proposed to finance the balance of the 1972 program. It asked that the certificate applied for be conditioned to require the Applicant to satisfy the Board that it has an adequate method of financing the cost of its 1972 program prior to proceeding with such construction other than the previously mentioned clearing, grading and ditching of right-of-way. In support of this amendment the Applicant, at the conclusion of the hearing, stated that it was of the opinion that it would take the Board some time to analyze the evidence relating to all the aspects of the application but believed the Board could deal quickly with the certification of the proposed 1971 construction in order to permit Trans-Canada to commence its program this winter, thereby providing a considerable amount of winter employment. The Applicant, therefore, requested the Board to give consideration to the issuance of a separate certificate for that portion of its facilities program scheduled for 1971 including a part of the clearing, grading and ditching of the right-of-way pertaining to its proposed 1972 construction program. There was no opposition to this amendment.

The Board recognized the urgency of an early decision in respect of the 1971 construction program in order not only to facilitate Trans-Canada embarking on a winter works program which would involve expenditures of approximately $10 million and provide employment for several hundred men, but also in recognition of the fact that the facilities proposed are minimal in relation to the demand for gas now anticipated.

Subsequent to the hearing and upon examination of the evidence as it pertained to the Applicant's request, the Board concluded that it was possible to dispose of the matter without prejudice to its disposition of the remaining portions of Trans-Canada's application. The Board's disposition of the 1971 construction program and that portion of the 1972 program relating to winter works in Northern Ontario is set forth in its Interim Report to the Governor in Council dated February 1971.

Accordingly, the Board, with the approval of the Governor in Council, has issued to the Applicant Certificate of Public Convenience and Necessity No. GC-44 dated 16 February, 1971.

In its Interim Report, the Board stated that it would be dealing with the Applicant's 1971 program in greater detail and would also dispose of the remaining portions of the application. This is the purpose of this Report.

INTERVENTIONS AND SUBMISSIONS

The following is a summary of the interventions and submissions filed by interested persons with the Board prior to the commencement of the hearing. As such, this summary is concerned only with the basic position of the intervenors as set forth in their interventions, or submissions, and does not indicate the degree of participation in the hearing, or the substance of their arguments at the hearing. All representations made to the Board have been carefully considered and are discussed in detail in this Report to the extent that the Board considers such discussion relevant to the Report.

The Minister of Mines and Minerals of Alberta ("Alberta") informed the Board that the Government of the Province of Alberta did not object to the application and did not intend to oppose the application in any way. Alberta was not represented by Counsel at the hearing.

The Attorney General for the Province of Saskatchewan intervened and was represented by Counsel at the hearing for the purpose of adducing evidence, examining witnesses and exhibits and submitting arguments.

The Minister of Justice and Attorney General for Ontario ("Ontario") intervened reserving the right to file material, adduce evidence, make argument and submissions to participate in the hearing. In its intervention, Ontario asserted the public interest of users of gas in the Province. It was also concerned that the Applicant's proposed gas export not impair its ability to meet Canada's reasonably foreseeable gas requirements and that the gas would be sold at a price which shall be just and reasonable in relation to the public interest. Ontario was represented by Counsel at the hearing.

In its intervention, the Attorney General for the Province of Quebec ("Quebec"), stated that it was in the interest of Quebec that natural gas be brought to centres in the Province which are not now served by the Applicant, at rates competitive with other forms of energy. Quebec also contended that the consumers of natural gas in the regions of the Province which are supplied by the Applicant should not have to pay a non-competitive rate for future deliveries of natural gas. Quebec was represented by Counsel at the hearing.

Alberta and Southern Gas Co. Ltd. ("Alberta and Southern") intervened for the purpose of being allowed to examine and cross-examine witnesses, to adduce evidence and

to advance arguments. Alberta and Southern was represented by Counsel at the hearing.

The intervention by Consolidated Natural Gas Limited and Consolidated Pipe Lines Company was for the purpose of cross-examining witnesses, of adducing evidence and of advancing arguments and the intervenor was represented by Counsel at the hearing.

Gaz Métropolitain, inc. ("Gaz Métropolitain"), stated in its intervention that it is a Canadian customer of the Applicant and is completely dependent on the Applicant for its natural gas supply. In support of its intervention Gaz Métropolitain stated that the Applicant seeks permission to effect very substantial investments in additional pipe line installations which, if authorized and made, will increase the Applicant's rate base and revenue requirements and hence may affect the determination by the Board of the tariffs, rates and/or tolls applicable to the sale of gas by the Applicant to Gaz Métropolitain, amongst others. Gaz Métropolitain was represented by Counsel at the hearing.

Greater Winnipeg Gas Company, also dependent on the Applicant for its natural gas supply, intervened for the same stated reasons as those of Gaz Métropolitain. It was not, however, represented by Counsel at the hearing.

In its intervention Northern and Central Gas Corporation Limited ("Northern and Central"), stated that

directly and indirectly through its principal subsidiaries Greater Winnipeg Gas Company and Gaz Métropolitain, it owns and operates transmission and distribution systems for the distribution of natural gas to industrial, commercial and residential customers in the Provinces of Ontario, Manitoba and Quebec. Northern and Central and its subsidiaries purchase all their gas from Trans-Canada. It stated that its primary concern was that the additional pipe line installations, if authorized and made, would increase the Applicant's rate base and revenue requirements and hence may affect the determination by the Board of the tariffs and rates or tolls applicable to the sale of gas by the Applicant to Northern and Central and its subsidiaries. It was represented by Counsel at the hearing.

Saskatchewan Power Corporation, a Crown Corporation created under the Power Corporation Act of the Province of Saskatchewan, stated in its intervention that it depends for part of its gas requirements on purchases from the Applicant. The purpose of its intervention was to adduce evidence, examine witnesses and exhibits and to submit argument. It was represented by Counsel at the hearing.

The Consumers' Gas Company ("Consumers'") stated in its intervention that it was materially dependent on Trans-Canada for its source of gas supply and was one of the largest Canadian customers of the Applicant. The main

purpose of this intervention was to ascertain the adequacy of the facilities of the Applicant and their effect on Consumers' upon completion of the proposed construction to meet Consumers' requirements of gas supply; to ascertain the economic feasibility of the proposed construction; and to ascertain the effect of the requested export licence and licence amendments on the ultimate supply and price of gas to Consumers' and its customers in the eastern Canadian market. Consumers' was represented at the hearing by Counsel.

Union Gas Company of Canada, Limited ("Union Gas") which purchases the largest portion of its gas supply from Trans-Canada and which transports gas for Trans-Canada intervened for the purpose of examining witnesses and adducing evidence. Union Gas was represented by Counsel at the hearing.

Westcoast Transmission Company Limited filed notice of an intervention for the purpose of cross-examination of witnesses and to advance argument but was not represented by Counsel at the hearing.

The Board received a submission from the Northwestern Ontario Development Council in which it noted the intention of the Applicant to project its work essentially as winter works program in Northern Ontario thus spreading employment opportunity for several hundred workers. The Northwestern

Ontario Development Council stated that, without reference in any way to the merits of the Trans-Canada application, its view of the proposed undertaking was that it could not possibly occur at a more opportune time to ameliorate in substantial measure unemployment in the region concerned.

MARKETS

Evidence

Trans-Canada estimated that its requirements of natural gas for sales and fuel for the three years commencing 1 November 1970, 1971 and 1972 would be as follows:

	Annual Deliveries (Bcf)		
	1970-71	1971-72	1972-73
Saskatchewan and Manitoba	78.0	83.9	89.3
Ontario and Quebec	466.5	582.7	621.0
Canadian Sales	544.5	666.6	710.3
Export Sales	281.1	273.4	273.8
Total Sales	825.6	940.0	984.1
Company Fuel, Losses, etc.	64.6	68.4	67.6
Storage Injection/(Withdrawal)	7.6	(7.6)	--
Requirements for Gas from Western Canada	897.8	1,000.8	1,051.7
Gas Transported for Saskatchewan Power	20.5	20.5	20.7

Trans-Canada stated that 94 per cent of the 122 Bcf growth in its Canadian sales in the contract year commencing 1 November 1971 was anticipated to occur in markets east of Manitoba. The great bulk of this increase was contracted for delivery at two points in Southern Ontario. Approximately half of this amount would be delivered to Consumers' for resale for thermal generation of electric power in Toronto and a further 39 Bcf would serve to increase deliveries in Dawn Township to Union Gas.

For the contract year 1972-73, Trans-Canada projected a growth in its Canadian sales of some 44 Bcf. As in the previous year, the bulk of the growth was forecast to take place east of Manitoba.

Commencing on 1 November 1971, exports include a proposed sale of 17 Bcf to Great Lakes for fuel and losses used in transporting Canadian gas through the United States to Eastern Canadian markets.

This assessment of potential market demand was based upon sales expected to be made under existing contracts, under contracts currently being negotiated and upon consultation with, or largely upon information supplied by, customer companies. Trans-Canada indicated that at the time these estimates were prepared, however,

it was recognized, by both it and its Canadian customers, that the energy market was in a state of flux. This, the Applicant stated, was most probably due to the sizeable changes in the industrial fuel market over the past six to eight months which had enhanced the relative competitiveness of natural gas.

The Applicant further acknowledged that while requirements in a current year generally matched quantities contracted, forecasting of requirements must, of necessity, take into account the constraint of uncertainties imposed by time. This was reflected by the progressive increase in the relative portions of "not contracted" requirements in the tables of estimated requirements submitted in evidence by the Applicant for the years 1970-71 to 1972-73 inclusive.

When questioned as to the possible effects which an increase in its selling prices would have on its estimated requirements, the Applicant stated that it would take a fairly significant increase of at least 10 per cent in the price of natural gas to have any effect on the total system annual requirements as submitted. This hypothesis was founded upon recent fairly substantial increases in the prices of competing fuels,

ranging from 5 to 10 per cent for those fuels normally utilized for residential and commercial use to as much as 20 per cent for those fuels used by industry.

In response to a question from the Board, Trans-Canada stated that its estimate of Canadian sales in the contract year 1971-72 was at a minimum level and could be higher by 25 Bcf. For the year 1972-73 the Applicant estimated that a minimum level would be 15 Bcf below its forecast and that a maximum level would be 25 Bcf above its forecast.

During the course of the hearing, Union Gas testified that the requirements of its market were substantially higher than those shown by Trans-Canada. Specifically, Union Gas stated that its firm service requirements for the contract years 1971-72 and 1972-73 exceeded those shown by Trans-Canada by 24.3 Bcf for each year. Union Gas also stated that it was requesting Trans-Canada to supply an additional 5 Bcf of interruptible gas for the April to October period of 1971.

Conclusions

The Board has given careful consideration to all the evidence presented in the course of this hearing with respect to the potential markets to be served during

the contract years 1970-71, 1971-72 and 1972-73 and is satisfied that the requirements will be no less than those estimated by the Applicant.

In light of the additional demands indicated by Union Gas during the hearing - 24.3 Bcf in each of the contract years commencing 1 November, 1971 and 1972 - it will be necessary for Trans-Canada to negotiate additional supply contracts. As stated elsewhere in this report gas reserves for this purpose are available to Trans-Canada.

SUPPLY

Evidence

Trans-Canada stated that for the 1971-72 and 1972-73 periods its effective surplus supply capability would be about 110 million cubic feet per day ("MMcf/d") and 125 MMcf/d respectively. It would prefer to have a margin in the order of 200 to 250 MMcf/d for operational flexibility and is attempting to achieve this through negotiations for the purchase of new gas reserves and peaking gas from various sources in Alberta.

Under cross-examination by Union Gas, the Applicant indicated the most likely areas from which an increase in maximum day supply could be obtained in the near term would be Harmattan-Elkton where about 50 MMcf/d could be expected, Harmattan East with another 50 MMcf/d and the Carbon Field which could provide 50-70 MMcf/d for short term peaking.

Trans-Canada filed a summary of provincial permits authorizing removal of gas from the Provinces of Alberta and Saskatchewan at a daily maximum rate of 3,208 MMcf/d. In addition, authorization for removal of another 100 MMcf/d will be sought from Alberta.

The Applicant stated that the growth in reserves experienced since the Board's August 1970 Report to the Governor in Council would result in a surplus sufficient to support the small export volumes now being sought. Furthermore, in a sense, the market for this gas could be considered a Canadian requirement, it being for the transportation of gas to Eastern Canada.

Conclusions

From the evidence presented, the Board concludes that the Applicant has the necessary supply to meet its requirements as set forth in the application. The Board notes that the Applicant's present contracted gas supply is inadequate to meet any additional growth in requirements beyond those shown in the application. However, the Board is satisfied that reserves are available and the Applicant's contracting practices will provide the necessary gas to meet its future requirements.

The Board concludes that the volume of gas, namely, 340 Bcf, for which the Applicant seeks an export licence is surplus to Canadian requirements.

FACILITIES

Evidence

Estimated costs of the proposed facilities are summarized as follows:

1971 Construction	Estimated Cost
Pipe Line:	
39.2 miles of 36-inch OD second loop in Saskatchewan and Manitoba	$ 7,848,100
137.7 miles of 42-inch OD third loop in Alberta, Saskatchewan and Manitoba	35,660,700
31.0 miles of 36-inch OD first loop in Northern Ontario	10,802,300
Compressor Stations:	
3,165 additional horsepower at Station 105 near Ramore, Ontario	1,338,000
Ethane conversion - Station 2 near Burstall, Saskatchewan	229,000
Piping modifications and foundations - Station 68 near Thunder Bay, Ontario	279,000
Subtotal - Pipe Line and Compressor Stations	$56,157,100
Clearing, Grading and Rock Ditching in Northern Ontario:	
This construction is proposed to be performed during the winter months of 1971 but relates to the 1972 program	10,648,000
Total cost of construction in 1971	$66,805,100

1972 Construction	Estimated Cost
Pipe Line:	
91.7 miles of 42-inch OD third loop in Saskatchewan and Manitoba	$ 24,137,500
383.3 miles of 36-inch OD first loop in Manitoba and Northern Ontario	128,684,900
10.4 miles of 24-inch OD first loop on the Montreal line	2,106,100
Compressor Stations:	
6,165 additional horsepower located at Station 110 near Haileybury and at Station 142 near Kingston, Ontario	2,785,000
Conversion of one 12,500 HP turbine to 16,000 HP at Station 2 near Burstall, Saskatchewan	467,000
Subtotal - Pipe Line and Compressor Stations	$158,180,500
Clearing, Grading and Rock Ditching in Northern Ontario:	
This construction is included in the 1971 program and to be performed in the winter of 1971	-10,648,000
Total cost of construction in 1972	$147,532,500
Total estimated cost of construction in 1971 and 1972	$214,337,600

Design

Trans-Canada has proposed 42-inch diameter pipe for the construction of its third loop in Western Canada and in support of its choice submitted a study showing the economic advantage of 42-inch diameter pipe as compared with smaller diameter pipe. It stated that it was unable to obtain pipe having diameters larger than 42 inches for the construction program in 1971 and, therefore, had not considered the economies of larger diameter pipe in the study. It was however now conducting comparative studies with pipe of diameter larger than 42 inches and if these studies indicate an economic advantage for larger diameter pipe, it will consider its use in the 1972 construction program. Trans-Canada indicated that starting the third loop in Western Canada with 42-inch pipe this year would not prejudice the use of larger diameter pipe in subsequent years should this prove advantageous.

The Applicant has proposed 36-inch diameter pipe for the construction of its first loop in Northern Ontario. A comparative study favoured 34-inch diameter pipe as this had the least cost of service for the nine-year market forecast period under review. However, as a matter of business judgment, it selected 36-inch diameter pipe because of present indications of a more rapid growth in gas requirements in Eastern Canada than incorporated in the sales forecast used in the study.

Trans-Canada stated that there was an opportunity while expanding its facilities in Northern Ontario in 1972 to save significant pipe mileage by selecting a short-cut route which would bypass Thunder Bay. A study was made comparing incrementally looping the existing line adjacent to the right-of-way with a number of alternate routes between Ignace and Nipigon, Ontario. The results indicated that a 36-inch diameter pipe line approximately 85 miles in length within these limits offered the greatest economic advantage and thus supported the Applicant's proposal.

Trans-Canada filed with the Board a study based on a nine-year market projection demonstrating that incrementally looping its existing pipe line in Northern Ontario over a number of years was economically advantageous compared with an alternate direct route between Nipigon and Sundridge which would require constructing the entire pipe line by the end of 1972; (see Appendix A-2). Although it had not conducted an on-site investigation of the types of terrain which would be encountered on the alternate route it estimated it would require an additional capital expenditure by 1972 of approximately $163 million for the 535 miles of the complete looping as compared with 155 miles of construction of the partial looping along the existing route. The Applicant believed that the relatively difficult problem of financing the 1972 construction program would become even more

difficult if it had to finance this additional $163 million but expressed the opinion that such financing would be possible if it were successful in receiving additional revenues equivalent to those it has applied for in its rate application now before the Board. However, even if it were successful in the rate application it would require from a few months to a year after that time to accomplish the necessary financing. Nevertheless, even if it presently had the necessary financing, the Applicant expressed doubts that construction of the alternate route could be completed in time to meet the 1972-73 market requirements.

In answer to Ontario's request for Trans-Canada to provide a study of an alternate route from the Great Lakes system to Sault Ste. Marie and thence along the north shore of Lake Huron and Georgian Bay, the Applicant stated that it had undertaken such a study for internal use only but that such a route would not permit it to meet the terms of its 1966 Agreement with the Crown in Right of Canada[1] ("Crown Agreement" or "Agreement with the Crown") in regard to flows through Northern Ontario.

Gaz Métropolitain questioned the Applicant's proposal to add approximately 10 miles of loop and one 3,000 horsepower turbine-driven compressor unit on the Montreal line for the

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(1) This Agreement provides that in each year up to 1 November, 1976 Trans-Canada will cause more than 50 per cent of the total volume of natural gas transported from Western Canada for use in Eastern Canada to be transported through the Northern Ontario Line, and more than 60 per cent thereafter.

operating year 1972-73 when the maximum peak day demand east of Toronto is relatively unchanged from the previous year. The Applicant stated that these additional facilities would be required to meet an increase of 13 MMcf/d in Gaz Métropolitain's demand, even though the total volume east of Toronto will remain relatively constant.

Locations of Facilities

The locations of the proposed facilities of Trans-Canada are shown on the maps, Appendices A-1 and A-2, and these facilities are described in more detail in Appendices B-1 and B-2.

Right-of-Way

The Applicant testified that all land rights required for the proposed construction of looping could be obtained without difficulty except possibly in two areas where it might be necessary to expropriate. All steps would be taken to restore the land affected by construction to a satisfactory condition.

In Ontario, Trans-Canada proposed to acquire 140 feet of additional right-of-way in rocky areas to provide sufficient pipe line separation for controlled blasting. In muskeg areas it was planned to acquire 90 feet of additional right-of-way to avoid the existing "rip-rap" installed during the construction of the original Northern Ontario Line.

Materials and Construction

Trans-Canada submitted detailed pipe specifications for both double submerged arc welded conventional pipe and double submerged arc spiral welded pipe to be used in the proposed looping program.

Trans-Canada testified that the Canadian content of the proposed two-year construction program would be over 90 per cent for the pipe line work, 75 per cent for the turbine-driven centrifugal compressor units, 90 per cent for the electric-driven reciprocating compressor unit and that all labour would be performed by Canadian contractors.

Trans-Canada has projected a two-year construction program for Northern Ontario because it believed that savings in the order of 7 to 8 million dollars could be achieved. It stated that the commencement of its construction program as soon as possible would permit certain preparatory work such as clearing, grading and ditching to be done in advance of its pipe laying program. Construction costs would be reduced by extending the work out over a two-year period which would enable the work to be done with fewer construction spreads. Not only would this result in more competitive bidding but it would also reduce the high costs of moving spreads to and from construction sites and reduce the effect of increased labour rates in 1972.

The Applicant indicated that it would wish to carry out operations in Northern Ontario during the winter months whether or not it was conducting a one or two year construction program. Much of the work is greatly facilitated by being undertaken during the winter period. Construction personnel also are more plentiful.

Transmission System Operation

The Applicant submitted data for both its own and the connecting Great Lakes systems ("the combined systems") for the operating years 1971-72 and 1972-73 which demonstrated on a sectional basis the ability of the combined systems to meet the daily, seasonal and annual requirements shown in the application assuming the loss of a unit at the critical location in each section; (see Appendices C-1 to C-6).

Union Gas has agreed to transport the Applicant's gas from Dawn, Ontario to Lisgar, Ontario for the year ending 31 October 1972 and the Applicant proposes to negotiate a similar arrangement for the year ending 31 October 1973.

Trans-Canada stated that, in the operating years 1971-72 and 1972-73, about 50.2 per cent and 51.3 per cent, respectively, of the requirements of Ontario and Quebec would be transported from Western Canada via the line through Northern Ontario, so the conditions of the Crown Agreement would be satisfied.

In order to conform with the Crown Agreement for the operating year 1971-72, while meeting its market requirements, the Applicant proposed to deliver 7.6 Bcf of gas to storage in Southern Ontario in the summer of 1971 for withdrawal in the winter of 1971-72. This predelivery will reduce Trans-Canada's delivery through Great Lakes in 1971-72. In addition the Applicant proposes to complete its 1972 construction program by 1 September 1972, two months in advance of the end of the normal construction period,which will enable the movement through Northern Ontario of an additional 5 Bcf of gas in the 1971-72 operating year.

At the hearing the Applicant stated that it did not have a contract for the storage of the 7.6 Bcf of gas. However, it had made inquiries of Union Gas and Tecumseh Gas Storage ("Tecumseh") and had determined that sufficient reservoir capacity would be available during the summer of 1971. Trans-Canada has assumed that the cost of storing and withdrawing this volume of gas would be approximately 5 cents per Mcf, the same as under the 1970 agreement between Union Gas and Tecumseh. The Applicant also stated that the cost of storing this gas would be considerably less than the cost of owning and operating, for one year, the additional facilities of 130 miles of 36-inch looping in Northern Ontario required to transport the gas in conformance with the Crown Agreement, estimated to be $5 million.

Union Gas asked Trans-Canada if it was prepared to enter into an agreement at an early stage to sell all or some portion of 17.2 Bcf shown as surplus to requirements in the application for the operating year 1971-72 assuming that the Applicant could obtain relief for that year from its Agreement with the Crown and also assuming that mutually satisfactory terms could be reached. Trans-Canada stated that it would be premature to enter into any such arrangement at this time as the 1971 construction program was mainly comprised of horse-power additions on the Great Lakes system and that this indicated surplus might be reduced because of possible difficulties in start-up of the compressor units. Union Gas compared the lesser amount of surplus capacity of 6.5 Bcf for the operating year 1972-73 with the larger surplus for the operating year 1971-72 (see Appendices C-3 and C-6). Trans-Canada stated that the second year's construction program was mainly comprised of looping in Northern Ontario and that a pipe line looping program required less surplus capacity for contingencies than a corresponding program of horsepower additions to provide the same degree of reliability.

Trans-Canada stated that it proposed to purchase liquefied natural gas ("LNG") from Gaz Métropolitain rather than to construct facilities on its Montreal line to provide reliability on a peak day for the operating year 1971-72. It filed with the Board a study showing the economic advantages

of purchasing 80 MMcf of LNG as compared with the owning and operating costs of 21 miles of pipe loop necessary to provide the same degree of reliability.

The Applicant further stated that it had agreed to raise its contractual delivery pressure to Midwestern Gas Transmission Company ("Midwestern") and Great Lakes from 550 to 750 pounds for the operating years 1971-72 and 1972-73. It filed with the Board a study demonstrating that the cost of owning and operating the additional loop required in Western Canada for this purpose would be more than offset by the additional revenue that it would receive in these two years and that these facilities would be required after the operating year 1972-73 to meet Trans-Canada's future requirements.

Conclusions

With respect to the 1971 construction program and that portion of the 1972 program consisting of clearing, grading and ditching of right-of-way in Northern Ontario, the Board has already found that these facilities are required for the present and future public convenience and necessity and with the approval of the Governor in Council has issued Certificate No. GC-44. As already mentioned, the Board's findings with respect to these facilities have been set forth in the Board's Interim Report to the Governor in Council dated February 1971.

With respect to the remaining portions of the 1972 construction program which the Applicant wishes to commence by 1 September 1971, the Board is satisfied that these facilities are required for the same reasons as it found the 1971 facilities to be in the public interest.

The Board in its earlier report questioned certain matters related to Trans-Canada's construction program.

With regard to the alternate route, the Board was concerned with the apparent lack of thoroughness of the Applicant's evaluation of it and was not prepared to make a decision on this issue on this evidence alone.

However, the Board took into account a number of additional factors which weighed heavily in its judgment.

First, the high capital cost of the alternate route in the initial years would cause an increase in the unit cost of gas to Eastern Canadian customers.

Second, Trans-Canada is already embarked on a large financing program for its 1971-72 construction. By the end of 1972 it would require an additional $163 million in new financing if the alternate route were chosen. In the absence of a decision on Trans-Canada's rate applications now before the Board, no clear evidence could be adduced that it was practical for the Applicant to meet this new financial undertaking in the time available.

Third, the Applicant expressed doubts about its physical ability to carry out the additional construction in time to meet the increased demand.

Therefore, despite some attraction for establishing service along a new route, the Board came to the conclusion, taking all the factors mentioned above into account, that looping the northern line is the prudent course of action. Furthermore, it noted that with gas service now available at Sault Ste. Marie, Ontario, it may be possible to serve some of the area in question in the future from that source.

The Board also dealt with the matter of the size of pipe proposed to be used in the third loop in Western Canada and it will require the Applicant to continue to conduct comparative studies with pipe of diameter larger than 42 inches and if these studies indicate an economic advantage in larger diameter pipe to consider its use in the 1972 construction.

The Board is satisfied that the proposed construction program in Northern Ontario extending over a two-year period will result in substantial economies to Trans-Canada as compared to undertaking two separate annual programs.

The Board is satisfied that Trans-Canada's contractual arrangements with Midwestern and Great Lakes in raising the delivery pressure from 550 to 750 pounds for the operating years 1971-72 and 1972-73 will be profitable to Trans-Canada.

The Board is aware of the problems Trans-Canada faces in undertaking a larger construction program such as would be necessary to meet the increased demand of Union Gas, due to both the physical limitations involved in such a program and the problems associated with the financing required. Concurrent with Trans-Canada's 1971 construction program the facilities of Great Lakes are being expanded and would have the capability in conjunction with Trans-Canada's system, to meet the 1971-72 accelerated requirements, but not in conformance with the Crown Agreement.

When the hearing ended the Applicant had not had time to fully consider the implications of the desire of Union Gas to contract for additional gas from Trans-Canada. Therefore, the Board believes that Trans-Canada should determine what modifications could be made in its 1972 construction plans which would enable it to meet the requirements of its customers consistent with the Agreement with the Crown. If, in view of the unforeseen

increased demand for gas Trans-Canada finds that it would be unable to meet the full requirements of Eastern Canada during this period and at the same time comply with its Agreement with the Crown, the Board assumes that Trans-Canada would take appropriate action to discuss the matter with the Government.

FINANCING

Evidence

Trans-Canada submitted financial projections showing that it would need financing to cover projected cash deficiencies of $149 million in 1971 and $108 million in 1972. The total financing requirement of $257 million for the two-year period ending 31 December 1972 includes the facilities detailed in the application to cost $214 million, miscellaneous construction to cost $22 million, and sinking fund obligations.

The Applicant said that short-term financing was arranged for only $90 million in 1971 out of the $149 million requirement for that year. Using that financing of $90 million the Applicant would carry out its 1971 construction program estimated to cost $56.2 million, preliminary right-of-way work in Northern Ontario costing $10.6 million in preparation for the 1972 construction program, and miscellaneous construction. The amount remaining unfinanced in 1971 would be $59.6 million which all relates to the 1972 construction program.

The Applicant stated that it has short-term financing by bank lines of credit to cover the cash deficiency of $90 million. The Applicant described its plans to convert a substantial portion of this temporary financing into permanent financing by an issue of debentures.

Trans-Canada submitted, as an exhibit at the hearing, its preliminary prospectus for the intended issue of debentures. Following the hearing Trans-Canada filed with the Board a copy of the actual prospectus dated 18 February 1971. The prospectus describes the debenture issue of $50 million being 9 per cent sinking fund debentures, series "C" unsecured, to be dated 10 March 1971, and to mature in 1991. The underwriting agreement is signed and after deduction of underwriting commission the issue will yield $48,875,000.

According to the Applicant there is no plan yet for the financing of the 1972 construction program which is expected to cost $148.5 million. Trans-Canada stated its obligation to consult its bankers before using its lines of credit for any 1972 expenditure. The Applicant testified that any financing plan that may evolve for the 1972 program will depend upon developments at the hearing of its rate applications and possible legal action by its customers relating to sales contracts. As soon as this information was available its financing plans would be finalized.

Trans-Canada said that it would like to commence 1972 construction in September 1971 if financing of the 1972 construction program could be assured. In that event, it is estimated that $59.6 million would be spent in 1971 on the 1972 construction program, all related to Northern Ontario. If

financing of the 1972 program cannot be arranged, the Applicant would delay that part of the two-year program.

As part of its 1971 construction program the Applicant proposes to convert its Burstall compressor facilities to be able to use either ethane or natural gas as fuel. Trans-Canada has a 40-year agreement which allows Dome Petroleum Limited and TransCanada GasProducts Ltd. to extract liquids from a portion of Trans-Canada's gas stream. Trans-Canada has agreed to use ethane from the extraction plant at Empress, Alberta, as compressor fuel for at least one year and it will carry out conversion of its facilities at an estimated cost of $229,000. The Applicant stated that this arrangement would not result in any greater cost for compression fuel. Trans-Canada said that the estimated conversion cost of $229,000 was justified because it would receive revenues of $125,000 each year from 1972 to 1975 and $200,000 each year for the remaining 36 years of the extraction agreement.

Conclusions

In relation to the Burstall compressor facilities, the Board is satisfied that Trans-Canada's proposed conversion will not be detrimental to its utility operation.

In relation to the construction to be carried out in 1971 in the amount of $66.8 million, the Board is satisfied that Trans-Canada has the ability to finance this program.

With regard to the 1972 construction program of $148.5 million, the Board concludes that Trans-Canada should provide satisfactory information before 31 July 1971 on its financing plans for this program or any modified program it may propose.

LICENCES

Evidence

The new export licence requested by Trans-Canada would provide for a gas supply to Great Lakes at Emerson, up to 17 Bcf per year, for fuel and losses required to transport to Eastern Canada the additional quantities of gas proposed for export-import under Licence GL-21.

Trans-Canada stated that under its Precedent Agreement with Great Lakes dated January 7, 1971 which was filed with the Board, the additional annual export of up to 17 Bcf of gas was required by Great Lakes for transportation fuel and losses. This fuel would be required to transport the additional gas which Trans-Canada proposed to export at Emerson and re-import under Licence GL-21 for use in Eastern Canada.

The schedule of prices contained in the Precedent Agreement is as follows:

Period	¢(U.S.)/Mcf
Initial delivery date to 31 October 1975	34.50
1 November 1975 to 31 October 1980	35.75
1 November 1980 to 31 October 1985	37.00
1 November 1985 to 31 October 1990	38.25
1 November 1990 to 31 October 1991	39.50

This agreement contains provisions for a monthly take-or-pay load factor of not less than 75 per cent and a floor price equivalent to 105 per cent of the comparable regulated Manitoba Rate Zone price. Under the floor price provision, United States dollars are converted to Canadian dollars at the average exchange rate prevailing during each three months period for the year ending March 31, and this average rate is used for the succeeding three months.

The Applicant requested that the volumes authorized under Licence GL-21 be increased from 248 Bcf per year to 256 Bcf in the year ending 31 October 1971 and to 340 Bcf per year thereafter. Trans-Canada also requested that the terminal date be extended from 31 October 1991 to 31 October 1994. It stated that the extended term would facilitate permanent financing by Great Lakes of its existing and proposed new facilities and maintain depreciation at a reasonable rate. The increased quantities reflect the Applicant's planned use of the Great Lakes system in transporting gas for consumption in Eastern Canada.

The proposed amendment to condition 5(1) of Licence GL-21 to allow a cumulative 2 Bcf excess of exports over imports was stated to be necessary as the Applicant has experienced difficulty in maintaining a gas balance between exports and imports. Trans-Canada stated that operationally it was almost

impossible to receive the same volume from Great Lakes that was delivered at Emerson on any one day and that it had experienced month-end differences of over 1.8 Bcf in exports over imports.

Trans-Canada further requested amendments to Licences GL-19, GL-20, GL-37, GL-38 and GL-39 to permit it to export on any one day up to 10 per cent in excess of the volumes otherwise authorized to be exported, for the purpose of recovering any previous short-fall in authorized exports which may have occurred. The Applicant stated that although it has not had to forego any exports to date, the proposed amendments would provide flexibility in operations. It would benefit Canadian customers in that in an emergency, export volumes might be mutually arranged to supply Canadian markets and made up through increased deliveries to export markets at a later date. It would not involve any change in the total amounts of gas authorized for export under these licences.

Conclusions

The Board finds that the export licence applied for is necessary to provide gas for fuel and losses in the Great Lakes system in the transportation of Canadian gas to markets in Eastern Canada and will not be for consumption in United States markets.

Section 83(b) of the National Energy Board Act requires that the Board satisfy itself that the price to be charged by an Applicant for gas exported by him is just and reasonable in relation to the public interest.

The price in the Precedent Agreement compares favourably with the average price of 30.76 cents per Mcf at 100 per cent load factor contained in the most recent General Service Rate Schedule for Trans-Canada's Manitoba Rate Zone. The export price, now estimated to be 113 per cent of the corresponding Manitoba price escalates each five year period by 1.25 cents (U.S) per Mcf. The Board is satisfied therefore that the border price is just and reasonable in relation to the public interest.

The Applicant has demonstrated its need for the increased volumes of gas for its Eastern Canadian markets and for which it seeks an amendment to Licence-GL-21. In order to keep the term of Licence GL-21 within the limit provided in the National Energy Board Part VI Regulations, the Board considers it would be necessary to issue a separate licence rather than amend the existing licence.

Having in mind the operating problems cited by Trans-Canada, the Board finds the request for a 2 Bcf tolerance in balancing the export quantities with import quantities to be reasonable.

The Board concludes with respect to Licences GL-19, GL-20, GL-37, GL-38 and GL-39 that the Applicant's request for a 10 per cent daily make up allowance would not adversely affect its Canadian customers and would provide Trans-Canada with desirable operating flexibility.

DISPOSITION

Certificate

The Board, having given careful consideration to all the evidence presented by the Applicant, is satisfied that the facilities applied for are and will continue to be required for the present and future public convenience and necessity. In this respect the Board, following the submission of its Interim Report to the Governor in Council dated February 1971 has, with the approval of the Governor in Council, issued Certificate GC-44 authorizing the 1971 construction program as well as that portion of the 1972 construction program relative to the clearing, grading and ditching of right-of-way in Northern Ontario.

As to the balance of the proposed 1972 construction program, the Board has reservations with respect to three matters which were discussed in previous sections of this report. These are the adequacy of the facilities to meet the full requirements of Trans-Canada's customers in the contract year 1972-73, the proper diameter of the pipe line looping to be installed in Western Canada in the 1972 program and the ability of Trans-Canada to arrange the financing of the additional pipe line.

In order not to impede the orderly planning of Trans-Canada, the Board is prepared, subject to the approval of the Governor in Council, to issue a conditioned certificate which

would require the Applicant to satisfy the Board at a later date in each of the expressed areas of reservation. Should a re-assessment of gas requirements indicate the need of additional facilities or should comparative studies of pipe diameter for the 1972 construction of the third loop in Western Canada indicate a need for a change in design, appropriate amendments to the certificate may be sought. The Board must be satisfied, of course, as to the financibility of the 1972 construction program as presently proposed or as it may be amended before construction commences.

This certificate, therefore, is subject to the following terms and conditions:

1. The Company shall not cause the construction of the additional pipe line respecting which this certificate is issued, to commence until it has satisfied the Board on or before the 31st day of July, 1971,
   (a) that arrangements have been made for financing of the additional pipe line,
   (b) that the studies undertaken to establish the economic feasibility of using larger diameter pipe for those portions of the additional pipe line referred to in Part (A) of the Certificate confirm the selection of 42-inch diameter pipe at that time, and

(c) that it has reassessed all additional gas demands for the contract year 1972-73 by its Canadian customers beyond those at present contracted for and, if any additional gas demands are ascertained, has provided evidence of its ability to construct the required additional pipe line to meet such demands,

unless upon application by the Company a later date is fixed by the Board.

2. The additional pipe line shall be the property of and be operated by the Company.

3. (1) The Company shall cause the additional pipe line in respect of which this certificate is issued to be designed, manufactured, constructed and installed in accordance with those specifications, drawings and other design data set forth in the application, as amended, and those which have been otherwise filed with the Board.

(2) The Company shall cause no variation in the specifications, drawings and other design data described in subsection (1) to be made without the prior approval of the Board.

4. The Company shall cause the testing of the additional pipe line to be carried out in conformity with the Board's requirements.

5. The Company shall cause the construction and installation of the additional pipe line

   (a) referred to in Part (B) and paragraph (i) of Part (E) of the Certificate, to be completed on or before the 31st day of August, 1972, and

   (b) referred to in Parts (A), (C), (D), and paragraph (ii) of Part (E) of the Certificate, to be completed on or before the 31st day of October, 1972,

   unless upon application by the Company a later day is fixed by the Board.

Licences

The Board has made a careful assessment of all the evidence presented to it and is satisfied that the Applicant has demonstrated that it has adequate supplies to meet the requirements set forth in its application. The Board also concludes that the quantity of gas to be exported does not exceed the surplus remaining after due allowance has been made for the reasonably foreseeable requirements for use in Canada and that the price to be charged by the Applicant for the gas to be exported is just and reasonable in relation to the public interest.

In its application, Trans-Canada requested that Licence GL-21 be amended in order to increase authorized export-import volumes and to provide the Applicant with a cumulative 2 Bcf excess of exports over imports. The Board is of the opinion that no amendment should be made to Licence GL-21. Instead it is prepared to issue a separate licence to the Applicant to provide for both the increase in the export-import volumes and for an operational tolerance.

With respect to the Applicant's request for a cumulative 10 per cent daily make-up allowance for Licences GL-19, GL-20, GL-37, GL-38 and GL-39, the Board is prepared to amend the licences to permit the authorized daily export volumes to be exceeded by 10 per cent without in any way altering the annual and total volumes contained in these licences.

In view of the circumstances and subject to the approval of the Governor in Council, the Board is prepared to issue the following licences and amending orders to existing licences.

I. Licence - Export-Import

A licence for the exportation of gas at a point near Emerson, Manitoba, and importation at Sault Ste. Marie and Sarnia, Ontario, subject to the following terms and conditions:

1. The duration of this licence shall be for a period commencing on the day of issue and ending on the 31st day of October, 1994.

2. The quantity of gas that may be exported and imported under the authority of and in accordance with this licence shall not exceed,

   (a) for the period commencing on the day of issue of this licence and ending on the 31st day of October, 1971, not more than 8,218,000,000 cubic feet;

   (b) for the term of this licence, 92,218,000,000 cubic feet in any consecutive twelve-month period ending on the 31st day of October thereafter, and

   (c) for the term of this licence, 2,129,232,000,000 cubic feet.

3. The Licensee shall comply with all provisions of the Agreement entered into between Her Majesty the Queen in Right of Canada, represented by the Minister of Energy, Mines and Resources, and the Licensee and Alberta Inter-Field Gas Lines Limited dated the 4th day of October, 1966.

4. (1) The Licensee may export under this licence only those quantities of gas which are to be imported under it and import the same quantity of gas so exported.

   (2) In each twelve-month period ending on the 31st day of October, the Licensee shall endeavour to import

under this licence a quantity of gas equal to the quantity of gas exported under this licence during such period but the total cumulative quantity of gas which the Licensee shall have exported under this licence as at any 31st day of October in any year shall not exceed by more than 2,000,000,000 cubic feet the total cumulative quantity of gas which the Licensee shall have imported under this licence as at such date.

5. The Licensee may exchange gas to the extent provided and under the terms and conditions contained in the Gas Exchange Agreement filed as Exhibit "F" of the contract between the Licensee and Great Lakes Gas Transmission Company, Michigan Wisconsin Pipeline Company, Natural Gas Pipeline Company of America and Inter-City Gas Limited dated the 5th day of June, 1969, filed with the Board.

6. The rates to be paid by the Licensee for the transportation of the gas by Great Lakes Gas Transmission Company from Emerson, in the Province of Manitoba, to Sault Ste. Marie and Sarnia, both in the Province of Ontario, shall not exceed those provided for in Article VIII of the contract between Great Lakes Gas

Transmission Company and the Licensee, dated the 12th day of September, 1967, as amended on the 7th day of January, 1971, and filed with the Board.

7. The Licensee shall not agree to any termination of, amendment to or agreement substituted for the contract referred to in Condition 6 without the prior approval of the Board.

8. The quantity, specific gravity and higher heating value of all gas exported and imported under the authority of and in accordance with this licence shall be measured by the Licensee in a manner approved by the Board at the places of exportation and importation on the international boundary line between Canada and the United States of America.

9. (1) The Licensee shall before the 31st day of May, 1971, unless upon application by the Licensee a later day is fixed by the Board, file with the Board all the requisite authorizations of the Federal Power Commission of the United States of America respecting the importation into and the exportation from the United States of the gas to be exported and imported under the authority of and in accordance with this licence.

(2) The Licensee shall not commence the exportation or importation of gas under this licence until it complies with subsection (1).

II. Licence - Export

A licence for the exportation of gas at a point near Emerson, Manitoba, subject to the following terms and conditions:

1. The term of this licence shall be for a twenty-year period commencing on the 1st day of November, 1971, and ending on the 31st day of October, 1991.

2. The quantity of gas that may be exported under the authority of and in accordance with this licence,

   (a) for the term of this licence, during any twelve-month period ending on the 31st day of October, is the volumes of gas required by Great Lakes in such period for fuel and other uses (including unaccounted for losses) to transport for the Licensee the quantities of gas authorized to be exported and imported under Licence GL-21 and the licence referred to in I, and to transport to market the quantities of gas the Licensee is authorized to export under Licences GL-20 and GL-37 less 14,700,000,000 cubic feet, provided that the quantity shall not exceed 17,000,000,000 cubic feet, and

(b) for the term of this licence, not more than 340,000,000,000 cubic feet.

3. The prices to be received by the Licensee for the gas to be exported hereunder shall be not less than those computed in accordance with Exhibit "B" of the Precedent Agreement dated the 7th day of January, 1971, between the Licensee and Great Lakes Gas Transmission Company, filed with the Board.

4. The quantity, specific gravity and higher heating value of all gas exported under the authority of and in accordance with this licence shall be measured by the Licensee in a manner approved by the Board at the place of export on the international boundary line between Canada and the United States of America.

5. (1) The Licensee shall on or before the 31st day of May, 1971, unless upon application by the Licensee a later day is fixed by the Board, file with the Board all the requisite authorizations of the Federal Power Commission of the United States of America respecting the importation into the United States of America of the gas to be exported under the authority of and in accordance with this licence.

(2) The Licensee shall not commence the exportation of gas under this licence until it complies with subsection (1).

III. Amending Orders

Orders under section 17(2) of the Act amending Licences GL-19, GL-20, GL-37, GL-38 and GL-39 by adding a new condition to the following effect:

> Notwithstanding the daily limitation in this licence, if the Licensee on any day fails for any reason to export the quantity of gas that may be exported on such day, then on each day thereafter during each twelve-month period ending on the 31st day of October the Licensee may export additional quantities of gas, not in excess of 10 per cent of the quantity herein licensed for export on that day, provided that the cumulative quantity of gas exported at any time during the twelve-month period does not exceed the sum, at that time, of the daily quantities authorized in this licence for that period.

All of which is respectfully submitted.

J. G. Stalback

Presiding Member

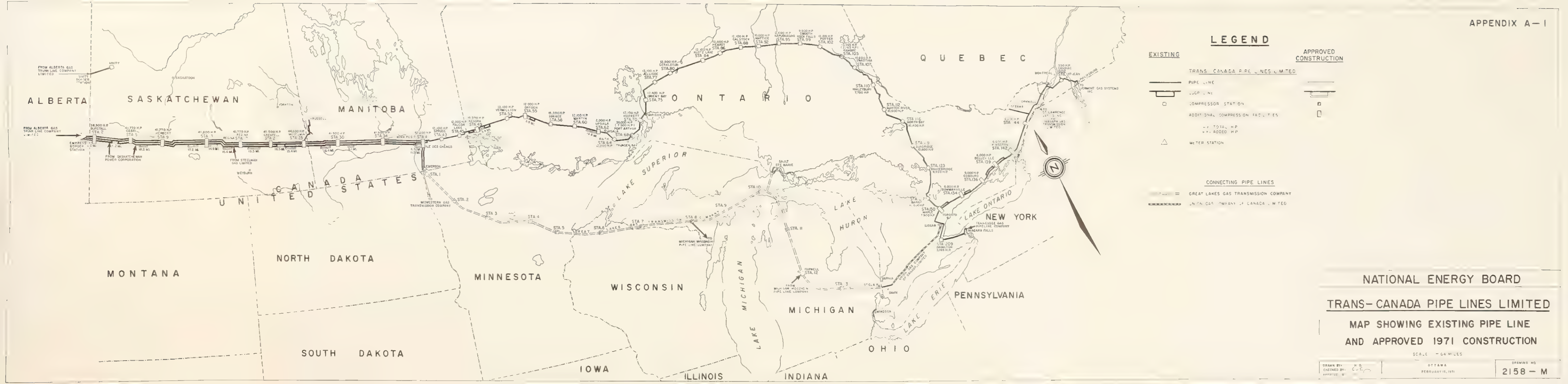
H. L. Briggs

Member

C. G. Edge

Member

APPENDIX A-1



NATIONAL ENERGY BOARD

TRANS-CANADA PIPE LINES LIMITED

MAP SHOWING EXISTING PIPE LINE AND APPROVED 1971 CONSTRUCTION

2158 — M

NATIONAL ENERGY BOARD

TRANS - CANADA PIPE LINES LIMITED

MAP SHOWING
EXISTING OR APPROVED PIPE LINE
AND PROPOSED 1972 CONSTRUCTION

SCALE 1" = 64 MILES

DRAWING NO. 2159 – M

1971 CONSTRUCTION

(A) Approximately 70.2 miles of 36-inch diameter lines of pipe for the transmission of gas, together with all appurtenances and works connected therewith, to be located as follows:

(i) approximately 11.2 miles, in the Rural Municipalities of Happyland No. 231 and Clinworth No. 230, and

(ii) approximately 16.5 miles, in the Rural Municipalities of Kingsley No. 124 and Silverwood No. 123,

all in the Province of Saskatchewan; and

(iii) approximately 11.5 miles, in the Rural Municipalities of Macdonald, Fort Garry, St. Vital and Ritchot, and in the Parish of St. Norbert,

all in the Province of Manitoba; and

(iv) approximately 5.4 miles, in the Township of Jaffray, District of Kenora,

(v) approximately 5.8 miles, in the Township of Zealand, District of Kenora, and

(vi) approximately 19.8 miles, in the Townships of Pyramid, Trewartha, Colliver, Stedman and Upsala, all in the District of Thunder Bay,

all in the Province of Ontario;

(B) Approximately 137.7 miles of 42-inch diameter lines of pipe for the transmission of gas, together with all appurtenances and works connected therewith, to be located as follows:

(i) approximately 2.2 miles, in the Improvement District No. 11, and in the Rural Municipality of Deer Forks No. 232,

in the Provinces of Alberta and Saskatchewan, respectively;

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(ii) approximately 18.2 miles, in the Rural Municipalities of Riverside No. 168 and Saskatchewan Landing No. 167,

(iii) approximately 17.2 miles, in the Rural Municipalities of Chaplin No. 164 and Wheatlands No. 163,

(iv) approximately 14.6 miles, in the Rural Municipalities of Caron No. 162 and Moose Jaw Number 161,

(v) approximately 16.6 miles, in the Rural Municipalities of Pense No. 160 and Sherwood No. 159,

(vi) approximately 19.5 miles, in the Rural Municipalities of Francis No. 127 and Montmartre No. 126, and

(vii) approximately 15.4 miles, in the Rural Municipalities of Silverwood No. 123 and Martin No. 122,

all in the Province of Saskatchewan; and

(viii) approximately 16.4 miles, in the Rural Municipalities of Hamiota and Blanchard,

(ix) approximately 6.1 miles, in the Rural Municipality of North Cypress, and

(x) approximately 11.5 miles, in the Rural Municipalities of Macdonald, Fort Garry, St. Vital and Ritchot, and in the Parish of St. Norbert,

all in the Province of Manitoba;

(C) Modifications to compressors and other works connected therewith at the Company's existing 'Compressor Station No. 2', in the Province of Saskatchewan;

(D) Additional compression facilities and other works connected therewith, to be located as follows:

(i) at the Company's existing 'Compressor Station No. 68', and

(ii) at the Company's existing 'Compressor Station No. 105',

both in the Province of Ontario; and

... 3

(E) Certain construction for pipe line purposes limited to the 'clearing and grading' of certain additional rights-of-way and 'ditching in rock areas' along the Company's 'Northern Ontario System' for a maximum distance of approximately 383.3 miles, to be located as follows:

(i) approximately 13.8 miles, in the Rural Municipalities of Tache and Ste. Anne, and in the Parishes of Lorette and Ste. Anne, and,

(ii) approximately 9.8 miles, in the 'Sandilands Forest Reserve', lying west of the Local Government District of Reynolds,

all in the Province of Manitoba; and

(iii) approximately 10.9 miles, in the Townships of Forgie and Boys, both in the District of Kenora,

(iv) approximately 9.5 miles, in the Townships of Tustin and Bridges, both in the District of Kenora,

(v) approximately 15.2 miles, in the Townships of Mutrie, Sandford, Eton and Wainwright, all in the District of Kenora,

(vi) approximately 5.0 miles, in the Townships of Zealand and Southworth, both in the District of Kenora,

(vii) approximately 17.9 miles, in the Townships of Ilsley, Bradshaw, Gour, Ignace and Skey, all in the District of Kenora,

(viii) approximately 18.5 miles, in the Townships of Upsala, Inwood, Joynt, Savanne and Gibbard, all in the District of Thunder Bay,

(ix) approximately 85.0 miles, in the Townships of Gibbard and Wardrope, in unsurveyed territory lying between the Townships of

... 4

Wardrope and Cockeram, and in the Townships of Cockeram, Church and Booth, all in the District of Thunder Bay,

(x) approximately 16.6 miles, in unsurveyed territory lying east of the Township of Kitto, and in the Townships of Summers and McComber, all in the District of Thunder Bay,

(xi) approximately 25.1 miles, in the Townships of Errington, Fulford, McQuesten, Houck, Oakes and Daley, all in the District of Thunder Bay,

(xii) approximately 16.8 miles, in unsurveyed territory, also referred to as 'Klotz Lake Provincial Park', lying south of the Townships of Low and Bell, respectively, all in the District of Thunder Bay,

(xiii) approximately 9.0 miles, in the Townships of Kohler and McCoig, both in the District of Cochrane,

(xiv) approximately 4.8 miles, in the Township of Eilber, in the District of Cochrane,

(xv) approximately 15.8 miles, in the Townships of Idington, Williamson, Owens and O'Brien, all in the District of Cochrane,

(xvi) approximately 0.2 of a mile, in the Township of O'Brien, in the District of Cochrane,

(xvii) approximately 19.3 miles, in the Townships of Shackleton, Haggart and Kendrey, all in the District of Cochrane,

(xviii) approximately 17.9 miles, in the Townships of Calder, Clute, Fournier, Lamarche and Hanna, all in the District of Cochrane,

(xix) approximately 14.5 miles, in the Townships of Playfair and Cook, both in the District of Cochrane, and in the Townships of Benoit and Maisonville, both in the District of Timiskaming,

... 5

(xx) approximately 15.5 miles, in the Townships of Law, Olive and Sisk, all in the District of Nipissing,

(xxi) approximately 16.7 miles, in the Townships of North Himsworth, South Himsworth and Laurier, all in the District of Parry Sound,

(xxii) approximately 16.5 miles, in the Townships of Strong, Armour and Perry, all in the District of Parry Sound, and

(xxiii) approximately 9.0 miles, in the Township of Muskoka, in the District of Muskoka,

all in the Province of Ontario.

1972 CONSTRUCTION

(A) Approximately 91.7 miles of 42-inch diameter lines of pipe for the transmission of gas, together with all appurtenances and works connected therewith, to be located as follows:

(i) approximately 12.2 miles, in the Rural Municipalities of Clinworth No. 230 and Miry Creek No. 229,

(ii) approximately 12.2 miles, in the Rural Municipalities of Saskatchewan Landing No. 167 and Excelsior No. 166,

(iii) approximately 14.3 miles, in the Rural Municipalities of Morse No. 165 and Chaplin No. 164, and

(iv) approximately 14.3 miles, in the Rural Municipalities of Montmartre No. 126 and Chester No. 125,

all in the Province of Saskatchewan; and

(v) approximately 15.4 miles, in the Rural Municipalities of Miniota and Hamiota,

(vi) approximately 8.6 miles, in the Rural Municipality of North Norfolk, and

(vii) approximately 14.7 miles, in the Rural Municipality of Macdonald,

all in the Province of Manitoba;

(B) Approximately 383.3 miles of 36-inch diameter lines of pipe for the transmission of gas, together with all appurtenances and works connected therewith, to be located as follows:

(i) approximately 13.8 miles, in the Rural Municipalities of Tache and Ste. Anne, and in the Parishes of Lorette and Ste. Anne, and

(ii) approximately 9.8 miles, in the 'Sandilands Forest Reserve', lying west of the Local Government District of Reynolds,

all in the Province of Manitoba; and

(iii) approximately 10.9 miles, in the Townships of Forgie and Boys, both in the District of Kenora,

(iv) approximately 9.5 miles, in the Townships of Tustin and Bridges, both in the District of Kenora,

(v) approximately 15.2 miles, in the Townships of Mutrie, Sandford, Eton and Wainwright, all in the District of Kenora,

(vi) approximately 5.0 miles, in the Townships of Zealand and Southworth, both in the District of Kenora,

(vii) approximately 17.9 miles, in the Townships of Ilsley, Bradshaw, Gour, Ignace and Skey, all in the District of Kenora,

(viii) approximately 18.5 miles, in the Townships of Upsala, Inwood, Joynt, Savanne and Gibbard, all in the District of Thunder Bay,

(ix) approximately 85.0 miles, in the Townships of Gibbard and Wardrope, in unsurveyed territory lying between the Townships of Wardrope and Cockeram, and in the Townships of Cockeram, Church and Booth, all in the District of Thunder Bay,

(x) approximately 16.6 miles, in unsurveyed territory lying east of the Township of Kitto, and in the Townships of Summers and McComber, all in the District of Thunder Bay,

(xi) approximately 25.1 miles, in the Townships of Errington, Fulford, McQuesten, Houck, Oakes and Daley, all in the District of Thunder Bay,

(xii) approximately 16.8 miles, in unsurveyed territory, also referred to as 'Klotz Lake Provincial Park', lying south of the Townships of Low and Bell, respectively, all in the District of Thunder Bay,

... 3

(xiii) approximately 9.0 miles, in the Townships of Kohler and McCoig, both in the District of Cochrane,

(xiv) approximately 4.8 miles, in the Township of Eilber, in the District of Cochrane,

(xv) approximately 15.8 miles, in the Townships of Idington, Williamson, Owens and O'Brien, all in the District of Cochrane,

(xvi) approximately 0.2 of a mile, in the Township of O'Brien, in the District of Cochrane,

(xvii) approximately 19.3 miles, in the Townships of Shackleton, Haggart and Kendrey, all in the District of Cochrane,

(xviii) approximately 17.9 miles, in the Townships of Calder, Clute, Fournier, Lamarche and Hanna, all in the District of Cochrane,

(xix) approximately 14.5 miles, in the Townships of Playfair and Cook, both in the District of Cochrane, and in the Townships of Benoit and Maisonville, both in the District of Timiskaming,

(xx) approximately 15.5 miles, in the Townships of Law, Olive and Sisk, all in the District of Nipissing,

(xxi) approximately 16.7 miles, in the Townships of North Himsworth, South Himsworth and Laurier, all in the District of Parry Sound,

(xxii) approximately 16.5 miles, in the Townships of Strong, Armour and Perry, all in the District of Parry Sound, and

(xxiii) approximately 9.0 miles, in the Township of Muskoka, in the District of Muskoka,

all in the Province of Ontario;

(C) Approximately 10.4 miles of 24-inch diameter lines of pipe for the transmission of gas, together with all appurtenances and works connected therewith, to be located as follows:

(i) approximately 5.3 miles, in the Township of Markham, County of York, and in the Township of Pickering, County of Ontario, and

(ii) approximately 5.1 miles, in the Township of Elizabethtown, County of Leeds, and in the Township of Augusta, County of Grenville,

all in the Province of Ontario;

(D) Conversion of a compressor unit and other works connected therwith at the Company's existing 'Compressor Station No. 2', in the Province of Saskatchewan; and

(E) Additional compression facilities and other works connected therewith, to be located as follows:

(i) at the Company's existing 'Compressor Station No. 110', and

(ii) at the Company's existing 'Compressor Station No. 142',

both in the Province of Ontario.

TRANS-CANADA PIPE LINES LIMITED *

WINTER DAILY & SEASONAL SYSTEM CAPABILITIES VERSUS REQUIREMENTS IN OPERATING YEAR 1971-72

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	MAXIMUM WINTER DAY (MMCFD)					WINTER SEASON, 152 DAYS (BCF)			AVERAGE DAY (MMCFD) (SEASON/152)		
	CAPABILITY	REQUIREMENT	SURPLUS (1)-(2)	CAPABILITY WITH LOSS OF COMPRESSOR UNIT AT MOST CRITICAL LOCATION	SURPLUS (4)-(2)	CAPABILITY	REQUIREMENT	SURPLUS (6)-(7)	CAPABILITY	REQUIREMENT	SURPLUS (9)-(10)
EAST OF STATION 130											
1. TOTAL CAPABILITY	520										
2. LOSSES	-3										
3. NET THROUGHPUT	517	505	6	490	-15	82.1	79.9	2.2	540	526	14
NORTHERN ONTARIO LINE AND GREAT LAKES LINE											
4. NORTHERN ONTARIO LINE TOTAL CAPABILITY	927										
5. GREAT LAKES LINE TOTAL CAPABILITY	1308										
6. CANADIAN FUEL AND LOSSES	-100										
7. NET THROUGHPUT	2135	1713	422	1997	284	306.7	301.9	4.8	2018	1986	32
EMERSON EXTENSION											
8. NET THROUGHPUT	1768	1709	57	N/A	N/A	254.8	247.7	7.1	1676	1630	46
DOWNSTREAM OF EMPRESS GATE											
9. WESTERN SECTION TOTAL CAPABILITY	3116										
10. FUEL AND LOSSES	-211										
11. NET THROUGHPUT	2905	2442	463	2761	319	419.0	407.9	11.1	2757	2684	73

NOTES

1. REQUIREMENTS SHOWN ON LINE 11 INCLUDE SPC TRANSPORTATION BUT EXCLUDE UNITY SALES.

REMARKS

ON ALL SYSTEMS, THE DAILY CAPABILITIES EXCEED BOTH THE MAXIMUM DAY AND AVERAGE DAY REQUIREMENTS. THIS IS ALSO TRUE EVEN FOR THE MOST CRITICAL LOSS OF UNIT CONDITIONS EXCEPT FOR THE MONTREAL LINE. THE SHORTAGE SHOWN IN COLUMN 5, LINE 3 WILL BE COVERED BY THE PURCHASE OF LNG FROM GAZ METROPOLITAIN.

ON ALL SYSTEMS, THE SEASONAL CAPABILITIES ALSO EXCEED THE REQUIREMENTS.

* EXTRACTED FROM TRANS-CANADA'S APPLICATION EXHIBIT 4, FACILITIES TAB 8, TABLE A, AS AMENDED DURING THE HEARING.

TRANS-CANADA PIPE LINES LIMITED *

SUMMER DAILY & SEASONAL SYSTEM CAPABILITIES VERSUS REQUIREMENTS

IN OPERATING YEAR 1971-72

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	MAXIMUM SUMMER DAY (MMCFD)					SUMMER SEASON, 214 DAYS (BCF)			AVERAGE DAY (MMCFD) (SEASON/214)		
	CAPABILITY	REQUIREMENT	SURPLUS (1)-(2)	CAPABILITY WITH LOSS OF COMPRESSOR UNIT AT MOST CRITICAL LOCATION	SURPLUS (4)-(2)	CAPABILITY	REQUIREMENT	SURPLUS (6)-(7)	CAPABILITY	REQUIREMENT	SURPLUS (9)-(10)
EAST OF STATION 130											
1. TOTAL CAPABILITY	536										
2. LOSSES	-3										
3. NET THROUGHPUT	533	479	54	510	31	114.2	103.0	11.2	534	481	53
NORTHERN ONTARIO LINE AND GREAT LAKES LINE											
4. NORTHERN ONTARIO LINE TOTAL CAPABILITY	861										
5. GREAT LAKES LINE TOTAL CAPABILITY	1271										
6. CANADIAN FUEL AND LOSSES	-90										
7. NET THROUGHPUT	2042	1398	644	1916	518	422.0	409.6	12.4	1972	1914	58
EMERSON EXTENSION											
8. NET THROUGHPUT	1734	1606	128	N/A	N/A	353.9	338.1	15.8	1654	1580	74
DOWNSTREAM OF EMPRESS GATE											
9. WESTERN SECTION TOTAL CAPABILITY	2779										
10. FUEL AND LOSSES	-185										
11. NET THROUGHPUT	2594	1929	665	2470	541	530.1	518.2	11.9	2477	2421	56

NOTES

1. REQUIREMENTS SHOWN ON LINE 11 INCLUDE SPC TRANSPORTATION BUT EXCLUDE UNITY SALES.
2. LINE 7, COLUMN 6 INCLUDES 5.0 BCF INCREASED CAPABILITY DUE TO TWO MONTH EARLY COMPLETION OF 1972 CONSTRUCTION ON NORTHERN ONTARIO LINE.
3. LINE 7, COLUMN 7 HAS BEEN REDUCED BY 7.6 BCF.

* EXTRACTED FROM TRANS-CANADA'S APPLICATION EXHIBIT 4, FACILITIES TAB 8, TABLE 8.

REMARKS

ON ALL SYSTEMS, THE DAILY CAPABILITIES EXCEED BOTH THE MAXIMUM DAY AND THE AVERAGE DAY REQUIREMENTS, EVEN WITH THE MOST CRITICAL LOSS OF UNIT CONDITIONS.

ON ALL SYSTEMS, THE SEASONAL CAPABILITIES ALSO EXCEED THE REQUIREMENTS.

TRANS-CANADA PIPE LINES LIMITED *

ANNUAL SYSTEM CAPABILITIES VERSUS REQUIREMENTS

IN OPERATING YEAR 1971-72

	(1) CAPABILITIES BCF	(2) REQUIREMENTS BCF	(3) SURPLUS CAPABILITY BCF	REMARKS
EAST OF STATION 130				
1. TOTAL CAPABILITY	197.4			
2. LOSSES & COMPANY USES	-1.1			
3. NET THROUGHPUT	196.3	182.9	13.4	
NORTHERN ONTARIO LINE AND GREAT LAKES LINE				ON ALL SYSTEMS THE ANNUAL CAPABILITIES EXCEED THE REQUIREMENTS.
4. NORTHERN ONTARIO LINE TOTAL CAPABILITY	314.8			
5. GREAT LAKES LINE TOTAL CAPABILITY	447.5			
6. CANADIAN FUEL, LOSSES AND COMPANY USES	-33.6			
7. NET THROUGHPUT	728.7	711.5	17.2	
EMERSON EXTENSION				
8. NET THROUGHPUT	608.7	585.8	22.9	
DOWNSTREAM OF EMPRESS GATE				
9. WESTERN SECTION TOTAL CAPABILITY	1017.3			
10. FUEL, LOSSES AND COMPANY USES	-68.2			
11. NET THROUGHPUT	949.1	926.1	23.0	

NOTES

1. REQUIREMENTS SHOWN IN LINE 11 INCLUDE SPC TRANSPORTATION BUT EXCLUDE UNITY SALES.

* EXTRACTED FROM TRANS-CANADA'S APPLICATION EXHIBIT 4, FACILITIES TAB 8, TABLE C.

TRANS-CANADA PIPE LINES LIMITED *

WINTER DAILY & SEASONAL SYSTEM CAPABILITIES VERSUS REQUIREMENTS

IN OPERATING YEAR 1972-73

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	MAXIMUM WINTER DAY (MMCFD)					WINTER SEASON, 151 DAYS (BCF)			AVERAGE DAY (MMCFD) (SEASON/151)		
	CAPABILITY	REQUIREMENT	SURPLUS (1)-(2)	CAPABILITY WITH LOSS OF COMPRESSOR UNIT AT MOST CRITICAL LOCATION	SURPLUS (4)-(2)	CAPABILITY	REQUIREMENT	SURPLUS (6)-(7)	CAPABILITY	REQUIREMENT	SURPLUS (9)-(10)
EAST OF STATION 130											
1. TOTAL CAPABILITY	531										
2. LOSSES	-3										
3. NET THROUGHPUT	528	506	22	503	-3	83.9	81.9	2.0	556	542	14
NORTHERN ONTARIO LINE AND GREAT LAKES LINE											
4. NORTHERN ONTARIO LINE TOTAL CAPABILITY	1031										
5. GREAT LAKES LINE TOTAL CAPABILITY	1342										
6. CANADIAN FUEL AND LOSSES	-97										
7. NET THROUGHPUT	2276	1818	458	2135	317	324.6	318.3	6.3	2150	2108	42
EMERSON EXTENSION											
8. NET THROUGHPUT	1902	1744	158	N/A	N/A	272.3	251.2	21.1	1803	1664	139
DOWNSTREAM OF EMPRESS GATE											
9. WESTERN SECTION TOTAL CAPABILITY	3261										
10. FUEL AND LOSSES	-209										
11. NET THROUGHPUT	3052	2569	483	2876	307	435.2	425.0	10.2	2882	2815	67

NOTES

1. REQUIREMENTS SHOWN ON LINE 11 INCLUDE SPC TRANSPORTATION BUT EXCLUDE UNITY SALES.

REMARKS

ON ALL SYSTEMS, THE DAILY CAPABILITIES EXCEED BOTH THE MAXIMUM DAY AND AVERAGE DAY REQUIREMENTS. THIS IS ALSO TRUE EVEN FOR THE MOST CRITICAL LOSS OF UNIT CONDITIONS EXCEPT FOR THE MONTREAL LINE. THE SHORTAGE SHOWN IN COLUMN 5, LINE 3 WILL BE COVERED BY THE PURCHASE OF LNG FROM GAZ METROPOLITAIN.

ON ALL SYSTEMS, THE SEASONAL CAPABILITIES ALSO EXCEED THE REQUIREMENTS.

* EXTRACTED FROM TRANS-CANADA'S APPLICATION EXHIBIT 4, FACILITIES TAB 8, TABLE D.

TRANS-CANADA PIPE LINES LIMITED *

SUMMER DAILY & SEASONAL SYSTEM CAPABILITIES VERSUS REQUIREMENTS

IN OPERATING YEAR 1972-73

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	MAXIMUM SUMMER DAY (MMCFD)					SUMMER SEASON, 214 DAYS (BCF)			AVERAGE DAY (MMCFD) (SEASON/214)		
	CAPABILITY	REQUIREMENT	SURPLUS (1)-(2)	CAPABILITY WITH LOSS OF COMPRESSOR UNIT AT MOST CRITICAL LOCATION	SURPLUS (4)-(2)	CAPABILITY	REQUIREMENT	SURPLUS (6)-(7)	CAPABILITY	REQUIREMENT	SURPLUS (9)-(10)
EAST OF STATION 130											
1. TOTAL CAPABILITY	550										
2. LOSSES	-3										
3. NET THROUGHPUT	547	500	47	523	23	117.4	104.6	12.8	549	489	60
NORTHERN ONTARIO LINE AND GREAT LAKES LINE											
4. NORTHERN ONTARIO LINE TOTAL CAPABILITY	961										
5. GREAT LAKES LINE TOTAL CAPABILITY	1272										
6. CANADIAN FUEL AND LOSSES	-87										
7. NET THROUGHPUT	2146	1486	660	2020	534	439.4	439.2	0.2	2053	2052	1
EMERSON EXTENSION											
8. NET THROUGHPUT	1865	1606	259	N/A	N/A	380.7	339.7	41.0	1779	1587	192
DOWNSTREAM OF EMPRESS GATE											
9. WESTERN SECTION TOTAL CAPABILITY	2914										
10. FUEL AND LOSSES	-184										
11. NET THROUGHPUT	2730	2030	700	2557	527	557.1	549.1	8.0	2603	2566	37

NOTES

1. REQUIREMENTS SHOWN ON LINE 11 INCLUDE SPC TRANSPORTATION BUT EXCLUDE UNITY SALES.

REMARKS

ON ALL SYSTEMS, THE DAILY CAPABILITIES EXCEED BOTH THE MAXIMUM DAY AND THE AVERAGE DAY REQUIREMENTS, EVEN WITH THE MOST CRITICAL LOSS OF UNIT CONDITIONS.

ON ALL SYSTEMS, THE SEASONAL CAPABILITIES ALSO EXCEED THE REQUIREMENTS.

* EXTRACTED FROM TRANS-CANADA'S APPLICATION EXHIBIT 4, FACILITIES TAB 8, TABLE E.

TRANS-CANADA PIPE LINES LIMITED *

ANNUAL SYSTEM CAPABILITIES VERSUS REQUIREMENTS

IN OPERATING YEAR 1972-73

	(1) CAPABILITIES BCF	(2) REQUIREMENTS BCF	(3) SURPLUS CAPABILITY BCF	REMARKS
EAST OF STATION 130				
1. TOTAL CAPABILITY	202.5			
2. LOSSES & COMPANY USES	-1.2			
3. NET THROUGHPUT	201.3	186.5	14.8	
NORTHERN ONTARIO LINE AND GREAT LAKES LINE				ON ALL SYSTEMS THE ANNUAL CAPABILITIES EXCEED THE REQUIREMENTS.
4. NORTHERN ONTARIO LINE TOTAL CAPABILITY	343.9			
5. GREAT LAKES LINE TOTAL CAPABILITY	452.7			
6. CANADIAN FUEL, LOSSES AND COMPANY USES	-32.6			
7. NET THROUGHPUT	764.0	757.5	6.5	
EMERSON EXTENSION				
8. NET THROUGHPUT	653.0	590.9	62.1	
DOWNSTREAM OF EMPRESS GATE				
9. WESTERN SECTION TOTAL CAPABILITY	1059.7			
10. FUEL, LOSSES AND COMPANY USES	-67.4			
11. NET THROUGHPUT	992.3	974.1	18.2	

NOTES

1. REQUIREMENTS SHOWN IN LINE 11 INCLUDE SPC TRANSPORTATION BUT EXCLUDE UNITY SALES.

* EXTRACTED FROM TRANS-CANADA'S APPLICATION EXHIBIT 4, FACILITIES TAB 8, TABLE F.